Mecheleciv

VOL. 17 NOVEMBER 1957 NO. 2

SCHOOL OF ENGINEERING
THE GEORGE WASHINGTON UNIVERSITY

NOVEMBER 1957

Molten iron runs white hot from a huge ladle into an open hearth furnace for conversion into steel. The quality of this steel is the responsibility of this engineer. He also assists in coordinating open hearth operations and incoming raw materials and plans improvements in methods. This is a typical example of one of the many opportunities for engineering graduates at United States Steel.

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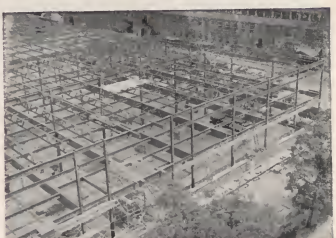
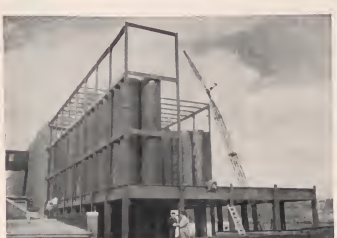


Going Up — the Steel Structure for the New Engineering and Service Building



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Coated Abrasives • Sharpening Stones
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Mechelectiv

VOL. 17 NOVEMBER 1957 NO. 2

SCHOOL OF ENGINEERING, THE GEORGE WASHINGTON UNIVERSITY

In This Issue:

ARTICLES

DEPARTMENTS

Published at the George Washington University by direction of the Engineers' Council. Published six times during the school year in October, November, December, March, April, and May. Entered as second class matter March 6, 1951, at the Post Office at Washington, D. C., under the act of March 3, 1879. Address communications to Mechelectiv Magazine, Davis-Hodgkins House, George Washington University, Washington 6, D. C. or telephone STerling 3-0250, Extension 528.

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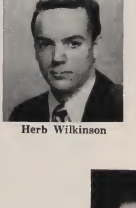
FAMILIAR FACES

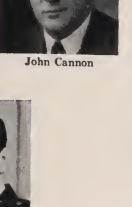
HERB WILKINSON, an E.E. from close-by Silver Spring, is one of our new freshman representatives to the Engineers' Council. Herb is attending G.W. under a Texaco Scholarship which will see him through four years of books and tuition with the small proviso that he must maintain a Q.P.I. of 3.00 or better—that's all. In addition, he works at Griffith Stadium on game nights and has worked in the past as a Forest Research Aide in which capacity he helped to determine the coverage of various crop-dusting sprays.

Herb held the office of Senior Class President at Montgomery Blair High School, an experience which should be of help in working and planning with the other members of the Council. He claims an interest in all sports (a good thing for someone working at Griffith Stadium), with a special leaning toward the big three—football, basketball, and baseball.

Since he is just beginning his education, it is a little early for definite plans for the future other than a good many hours of study; but with his engineering degree Herb should have little trouble finding a spot for himself among the ranks of the engineers.



Herb Wilkinson



John Cannon

JOHN CANNON expects to graduate in February '58 with a B.M.E. although he has almost enough hours in liberal arts to qualify for a B.A. John has been attending GW on a part-time basis since the early forties and has taken many subjects which appealed to his wide-ranging interests but which weren't required under the engineering curriculum.

John's job as a Senior Government Representative for PEPCO gives him the opportunity to contact representatives from various government agencies who need help in solving their power problems. As a background for this work, John has put in 29 years with PEPCO. He started as a helper in a substation at $.30 an hour. He says that he has always enjoyed working with people, especially young people. Perhaps this accounts for his outstanding service to the Student Chapter of A.S.C.E. He has served in most of the offices and is taking his second tour as chairman. Even more significant than his personal service is his contribution of the John Cannon Award for Student Papers. Every year John gives the chapter $60 which the chapter officers can use in any way they see fit as prizes for the student paper contest. John's purpose in establishing the award was to "stimulate interest in the society, in student papers, and in the university." He intends to keep up the award even after he graduates.

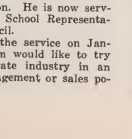
Jim Cauffman

JIM CAUFFMAN is a man who wanted to see some of the world after getting his B.E.E. at G.W. Having been a member of the A.F.R.O.T.C., he saw a good chance to satisfy his desire to travel when he went on active duty. To make sure that he would shake the dust of the local area and the U. S. from his feet, he volunteered for overseas duty. True to form, the Air Force cut orders assigning Second Lieutenant James Allan Cauffman to duty with the Air Force Security Service, Washington, D. C., at a location within walking distance of his home. One advantage of the assignment was that it enabled Jim to continue his education on the graduate level in Engineering Administration at G.W.

Originally Jim came to G.W. on an engineering scholarship after graduating from Eastern High School in D. C. He claims to be one of the few students who have obtained their engineering degree in four years without going to summer session and without ever being on probation.

While an undergraduate, Jim was Marshal of Theta Tau, Corresponding Secretary of AIEE-IRE, member of the Engineers' Council, President of the Arnold Air Society, and Vice President of Pershing Rifles. This string of activities pretty well used up Jim's spare time but left a little for playing piano and uke and enjoying music in general. Of all his activities, Jim enjoyed serving on the Engineers' Council somewhat more than the others, since he felt that activity was a service organization most nearly associated with his school life and profession. He is now serving as Graduate School Representative on the Council.

After leaving the service on January 1, 1959, Jim would like to try his luck in private industry in an engineering management or sales position.



Don Bragg

DON BRAGG, another Freshman Representative on the Engineers' Council, was born in West Virginia but lived most of his life in Alexandria. Don will have two diplomas marked George Washington when he graduates in 1961, one from his Alexandria high school and one from the University.

A man of diversified experience, Don has been a theater usher, has worked for a moving company, and has operated the business end of a brush in a car wash. He plans to carry this diversification into later years by starting his own construction company after receiving his C.E. degree at G.W. While organizing his company, he intends to continue at G.W., working toward an M.E. degree. He has admitted a liking for offices where he has work for the benefit of others and seems to be headed toward several such posts before graduation. He has already managed to join A.S.C.E. and Pi Kappa Alpha social fraternity as well as filling the billet on the Council.

As hobbies, Don chooses coin collecting, almost all sports, and happily for a future engineer, is interested in making all sorts of mechanical devices that can be put to some useful purpose.

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FACULTY PAGE

The Engineer As An Individual

By DR. R. A. HECHTMAN
Executive Officer
Department of Civil Engineering

Dr. Hechtman received his B.S.C.E. Degree at the University of Washington and pursued study at this school, Lehigh University, and the University of Illinois, completing the degree of Doctor of Philosophy in Engineering at the last. At the same time he was engaged in ship repair and steel construction. Dr. Hechtman entered the employ of Dravo Corporation in Pittsburgh, Pennsylvania, and worked consecutively in structural design, plant management, and corporation administration. He returned to the academic field as Research Engineer in Civil Engineering at the University of Illinois. Dr. Hechtman later became Professor of Structural Research at the University of Washington and served there until he accepted the post of Professor of Civil Engineering and Executive Officer of the Department of Civil Engineering at the George Washington University in 1955.

What is the primary function of an engineer? If one seeks an answer to this question by consulting a dictionary, he is left with the feeling that the meaning found there for the word "engineer" is not very descriptive of the function of an engineer. He is not merely one who designs or constructs bridges, machines, or electronic equipment, who directs some phase of their operation, or who engages in research necessary for their development. These are only the products of the engineer's activity. His primary function is to think—to create, analyze, develop, construct, or operate engineering works through thinking. He utilizes the knowledge and fundamental principles discovered by scientists and engineers, and, if these are insufficient, he attempts entirely within his own abilities to find some sort of answer to his problem. While the product of the engineer is very important, a full comprehension of his primary function can be gained only by understanding him as a thinker. His value is measured largely by the quality and the quantity of his thinking and particularly by his capacity for original thinking.

Since thinking is an individual process, even when the engineer is one of a group, we must also regard him as an individual. The engineer as a thinker and the engineer as an individual are inseparable. It is in this dual role that the writer wishes to examine him to determine what effect present-day civilization is having on his place in society as a thinking individual.

One of the prime prerequisites for thinking is the freedom to think, a privilege which the individual avails himself of within the framework of the political and social system of his residence. The mere availability of this privilege does not assure it to him. He himself must reach out, take it, and use it, and unless he so does it is not his. The individual must feel—in fact, he must be determined—that the freedom to think is his, regardless of the political or the intellectual climate in which he finds himself. He must have the conviction that it is his fundamental function and his ever-available privilege to think and to express himself. He alone can defend his freedom to think against adverse influences, for he surrenders it either by choice or because of his own apathy. In this country the engineer need no longer guard his freedom against the threat of physical force, but there are other more subtle influences abroad to which he must be alert.

The development of military power has become dependent upon the cooperation of the scientist and the engineer. At present we find ourselves engaged in a fierce competition with a country that uses its technological accomplishments to threaten world domination. Here is a repetition of the rise of strength in Nazi Germany during the 1930's. The expansion of power in both cases was brought about with the active assistance of the scientist and the engineer. They wrongly believed that the responsibility of the thinker extended no farther than correct adherence to scientific and engineering principles and that he had no moral responsibility for the product of his thinking.

(*Please turn to page* 22.)

STRAWS IN THE WIND

By PATRICIA C. STODDARD
G. W. Placement Officer

Early in the semester Dick Rumke paid me the high tribute of requesting that I submit an article for this issue of *Mechelecіv*. With no urging I accepted enthusiastically, threatening Dick that I would in all probability use his generous opportunity as a medium for reaching his engineering readers with a "timely" message related to the current placement picture in the technical fields. Contemplation set in: I pondered the possiblities of several potentially "stimulating" and "timely" messages. I came up with several: (a) criteria for deciding upon which company to work for, (b) "do's" and "don'ts" of interviewing, (c) recent government cut-backs and their effect on technical job opportunities, and (d) a capitulation of the latest annual survey on salaries.

Well, let me hasten to say that I'm not going to write a word on any one of the aforementioned—and for a very good reason! Too much has already been written—much of it excellent. Seniors using the G. W. Placement Office have this year been given the first edition of the PLACEMENT ANNUAL. In the ANNUAL are three very excellent articles on the subjects of wise selection of an employer. One is titled "Starting From Scratch" and is written by Paul Boynton, Recruiting Coordinator of Socony Mobile Oil. Another is "How to Select a Company" by Geraldine Wyatt, Director of Placement at the University of Delaware. "Reaching a Decision" by John E. Woods, Placement Director at the University of Omaha is yet another helpful article in this same vein.

"Do's and don'ts" for interviews has been nicely handled by New York Life Insurance Company's pamphlet "Your Job Interview", available to any student visiting the Placement Office. The state of business in general, employment figures, economic analyses and forecasts related to Defense Department cutbacks are discussed in every day's press. Even Summer Schlicter and Seymour Harris are reluctant to give definitive statements on the fast changing economic picture embracing our technical resources and planning needs. How could a humble placement officer venture with any degree of confidence onto such shifting sands of information?

And the salary surveys abound! They can be studied at any time by any student with interest enough to visit our office and take note of the data. This material is perishable in that a survey completed this month may not resemble at all one made next June but the approach is standard. No, these topics just didn't seem appropriate, so at the risk of being without a "timely" message, I rejected them all in favor of two or three thoughts that have been very much in my mind in the past months—months approaching my resignation from G. W.'s job as Placement Officer to take up duties in a role not yet experienced—that of being "somebody's mother". Maybe it's the psychology of someone close to retirement that breeds the rambling, philosophical mood. I'm not sure what brings it about but I can't resist the urge to toss these few straws into the wind and ask you to reflect a bit on them.

It occurred to me that the development of our placement service at G. W. is typical of what's been happening in colleges and to industry all over the country in the past few years. Although placement duties at George Washington began for this writer in 1953, the placement function at the University was formally launched not too many years prior to that. Its beginnings were humble indeed! The first person assigned placement responsibilities at the University was a part-time assistant in the Office of Women's Activities. She was put on the job because local employers expected the University to have someone responsible for acting and serving their requests for students to do part-time or temporary typing jobs in their office or to tutor their sons in math. This arrangement lasted two years or so until 1948 when Mr. Leonard Vaughan, then

Personnel Officer of the University, was given the task of establishing a placement office for the University. He hired a full-time assistant to work in a 2' x 4' cubby hole which housed herself, a desk, and a file cabinet. How we have grown since those humble beginings! Now a staff of three, the Office receives between 150 and 300 job orders per month and places more than 1,500 students and alumni each year. These figures represent quite a few things—one of them a shift from a buyer's to a seller's market and the college student is on the selling end of the bargain. But the point of this narrative is that our growth at G. W. is only typical of what's been happening in college placement the country over. We're therefore modest in the knowledge that economic conditions of the last few years have largely brought about the accomplishments in which we take pride.

One of the largest factors contributing to the growth in placement programs everywhere is the impetus the War gave to company recruiting on college campuses. Since the War, recruitment of the college graduate has become in many organizations a full-time operation for a large staff of people. The intensity of college recruiting today with the large number of employers scheduling interviewing dates and competing to see students has tremendously benefited students, employers, *and* the colleges. It has widened the range of openings available to the student; it has improved selection, training, and placement within the employing organizations and has created, generally, better understanding between colleges and business organizations, even resulting occasionally in the growth of financial assistance to colleges. These are its contributions on the plus side, but the picture, unfortunately, has not been devoid of negative aspects. The increase in volume of college employment activity has been so rapid that quite naturally certain problems have developed from it.

Many companies in recent years adopted methods which lead to pressure on students. Certain company practices developed which inhibited wise career choices by students and thereby contributed to building an unhealthy campus atmosphere actually threatening injury to the best interests of employers and students as well. These practices have included such things as bonus payments to seniors who accept offers by a certain date, "padded" salary and fringe incentives, pressure on members of the student's family, professors, etc. In the past few years these threats have been the focus of attention of many individuals and groups interested in college recruitment. The subject became an important item on the agenda of the annual meetings of most of the regional placement associations. These groups this fall have released a statement (copies of which are now on display in both the Davis-Hodgkins House and in the Placement Office) which list a set of standards for college recruiting. The statement covers not only general principles which should be considered in recruitment but also specific practices related to it. Relative to these practices is a list of "do's" for students which I should like to suggest as "required reading" for graduating seniors. Throughout the statement it is emphasized that good recruiting practices are those which best serve the paramount interests of the student. As one of the principles states: "From the present graduates over the next generation will come a major part of the leadership not only of individual companies but also of the business, governmental and educational structure of the country itself".

It is the responsibility of this very leadership which now defines new challenges for today's graduates. Many things are changing in our culture—our economy, if you wish—things which call for a new way of thinking on the part of employers. Many of you will be employers in the not too distant future; many of you will be in policy-shaping positions in years to come. To you let me again throw some "straws" your way: two very specific ones which call for different attitudes on the part of employers than we have today. I speak of: (1) attitudes toward the mature worker, and (2) attitudes toward women who seek to combine career and homemaking but without adequate training for the former.

One of the greatest laments to any employment counselor is the great problem of superannuation in the face of real shortages of trained personnel for certain jobs. Older people have great difficulty in finding jobs. Let there be no doubt that real age prejudice haunts employment offices every bit as much if not more than racial, religious and sex prejudices! Our office has worked closely with a number of older alumni, many of them extremely qualified individuals who for various reasons—many of them completely unrelated to their abilities or desirability as employees—are having difficulty finding the right job. A few of these men have been highly qualified engineers. Their problems are considerable; their attitudes often negative from profound discouragement. These are men and women forty and over. Counseling is one of their greatest needs, but opportunity is the only

(*Please turn to page* 20.)

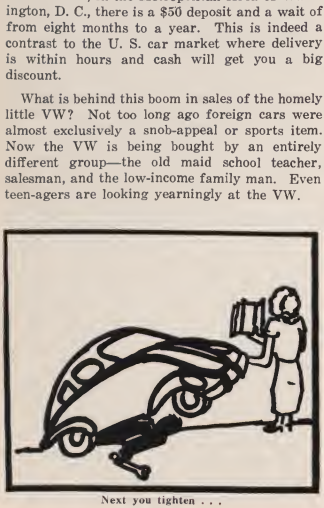
VOLKSWAGEN OR DETROITMOBILE?

By CLIF HALL, B.E.E. '59

Cartoons by Robert Stout

For the first time in auto history a foreign car is selling faster in the United States than a domestic model. Volkswagen sales have passed the 60,000 per year mark and seem to have stopped there only because of the limited supply. Eighteen months ago a $25 deposit and a four-month wait would guarantee delivery of a VW sedan. Now, in the Metropolitan Area of Washington, D. C., there is a $50 deposit and a wait of from eight months to a year. This is indeed a contrast to the U. S. car market where delivery is within hours and cash will get you a big discount.

What is behind this boom in sales of the homely little VW? Not too long ago foreign cars were almost exclusively a snob-appeal or sports item. Now the VW is being bought by an entirely different group—the old maid school teacher, salesman, and the low-income family man. Even teen-agers are looking yearningly at the VW.



Next you tighten . . .

The sales of all small foreign cars are way up. The VW, however, appears to be considered the best for the money. There are a lot of reasons for the big demand for the VW. The main reason is the serious need for a small economical car. Detroit is beginning to admit this (witness the fact that U. S. manufacturers are starting to bring in some of their own foreign-made cars), but VW got into the field first with the best and is staying way out in the lead.

Just what does the VW have to offer? First and foremost is economy. Gasoline cost is about one cent per mile. The crankcase holds less than three quarts of oil and there is no antifreeze to buy. A set of tires lasts 70,000 miles and the engine lasts 100,000. Repair costs are low. It costs only $8.00 to remove and reinstall an engine.

There are many other features to appeal to the buyer. Performance isn't bad for a small car. The VW corners and maneuvers well, and is easy to handle in traffic. The four-speed synchro transmission is easy to shift. The many shifting operations, rather than being tiring, tend to keep the driver more alert. Steering is tight and easy to control. There is plenty of leg room in the little bug, and a long ride in the bucket seats is no more tiring than in a U. S. car.

VW's four-cylinder horizontally-opposed engine is a masterpiece of simplicity and dependability. They just can't be overheated and they seldom need repairs. Removing the engine is a small chore, and if necessary one piston, cylinder and head can be replaced without touching the other three. The instruction manual puts the Detroit-published manuals to shame. With it to guide you, you can overhaul your carburetor yourself, adjust it, adjust your valves, reset your headlights, etc.

A big question asked by American car owners is, "How does it compare to my car in dependability and performance?" If you want a tough reliable car that will get you there, VW appears to be the answer. To test the VW, a time race was held between a VW and a Chrysler New Yorker. Keeping within legal speeds on a run from Chicago to New York City the VW beat the Chrysler's time in spite of a delay caused by running out of gas when the driver misjudged the distance to the next gas station.

Keeping within legal speeds . . .

In the gruelling Australian stock car "Reliability Finals" the light European cars have taken almost all the honors. This year Volkswagen almost monopolized the winnings, taking the open and team events in the 7,000-mile Ampol Trial and also the 8,500-mile Mobilgas Trial.

There is virtually no risk in owning in Volkswagen. If you want to buy one to see if you like it, you don't need to worry about losing money. In fact, if you sell it before the new model comes out you can get even more than you paid for it. In Lincoln, Nebraska last July, car dealers showed three VW sedans for sale—one new, two used. One used car was priced at $25 higher, and the other at $50 higher than the new one. It's the same everywhere. Used 1958 VW's are being brought in from Europe and sold in the D. C. Metropolitan Area for up to $500 more than the price of a new one. Put an ad in the paper and your car will be sold in a few hours.

It is impossible to point out a single reason for the shift to VW and other small European cars. Human attitude changes slowly, gaining momentum over a long period of time. This is evident from the reaction to Chrysler's Airflow which was introduced in 1934. This car had many excellent changes which have since been made in nearly all cars. Yet, because the public would not accept them in 1934, the model had to be abandoned. By the end of World War II, however, public opinion had so changed that Studebaker started the present trend in cars with some radical changes. Now the trend has reversed and the swing to small economical cars is gaining momentum.

Still Detroit hasn't fully accepted the fact that there is some pretty tough competition coming. So far its new car market hasn't been hurt. The used car market has felt the real pinch. As Detroit continues to produce bigger, flashier and more powerful cars and purchase price and operating expense go up, the small European car is going to make inroads on the new car market.

Two questions come to mind: When is Detroit going to recognize the nature of coming competition, and what can be done about it? It looks like we'll have to do some waiting for the answer to the first one. The answer to the second question is obvious.

It is hard to believe that Detroit with all of its experience and know-how can't produce a VW-type car for $1500. Of course initial tooling and design would be expensive, but with body

(*Please turn to page* 18.)

1960 Detroitmobile — Solo in eight hours

ALUMVIEWS . . .

COL. HOWARD W. HODGKINS, B.S. in C.E. '13, L.L.B. '16, has retired after practising Patent Law in Chicago for 36 years and is living at "Mintwood", Bluemont, Virginia, in the Blue Ridge Mountains.

LAWRENCE K. HYDE, B.S. in M.E. '25, is serving as Assistant to the Vice President, Electronics and Instrumentation Division of the Baldwin-Lima-Hamilton Corporation, Waltham 54, Mass. His home address is 3 Livermore Road, Wellesley Hills 82, Mass.

COL. A. J. KELLER, USMC, M.E.A. '56, is now stationed with the Comm-Elec School Bn, MCRD, San Diego 40, Calif.

WALLACE G. KISTLER, JR., B.M.E. '49, is currently with the Army Ballistic Missile Agency, Huntsville, Alabama. His address is Carlisle Park, Guntersville, Ala.

SAM MAWHOOD, B.E.E. '56, was recently elected President of the National Capital Alumni Association of Theta Tau Fraternity. PAUL KUZIO, B.C.E. '55, was elected Vice President.

M. BASHIR LUDIN, B.C.E. '57, will complete his graduate work at Princeton at the end of January, 1958, and his address thereafter will be 545 Shair-Pur, Kabul, Afghanistan.

SUBBIAH SANKARAN, B.M.E. '56, received his M.S. in M.E. from Carnegie Institute of Technology in September and is now working for Kaiser Aluminum and Chemical Corp. as a Design Engineer.

IRWIN W. TUCKER, B.S. in Eng. '39 (Ph.D. '48, Maryland), is Director of Research for Brown and Williamson Tobacco Corp. in Louisville, Kentucky.

JOHN T. FEARNOW, JR., B.M.E. '51, is now Engineering Supervisor for Doubleday and Co. at their new plant in Berryville, Va. His first child, John Tyler III, arrived on October 4, 1957. John's current address is 44 South Loudon St., Apt. 8, Winchester, Va.

RAYMOND I. TOMPKINS, B.S. in E.E. '32, has moved from Falls Church to 1905 Ashwood Drive, Alexandria, Va.

LYMAN E. CLARK, B.C.E. '50, works as a Safety and Fire Protection Engineer for the Veteran's Administration in D. C. He has one son 21 months old and his present address is 5306 Gretchen Street, Kensington, Md.

HOWARD DAVIS, B.M.E. '57, enjoys working for Kroger Corp. of Cincinnati, where he spends some time traveling on site surveys and some time doing design work. His address is 6046 Oakwood Ave., Cincinnati, Ohio.

EUGENE M. BALL, B.S. in M.E. '08, has moved from Eureka Springs, Arkansas, to 319 12th St., Atlantic Beach, Florida.

HARRY M. BRANDLER, B.E.E. '55, is a Consulting Engineer with the Standard Electric Time Co. This work requires him to travel the whole U. S. but he claims to find it very enjoyable and profitable. He is the proud father of a baby boy, David Joseph, born this past August. Harry's present address is 107 School Street, Springfield 5, Mass.

CHARLES WIMBROW, B.S. in M.E. '51, has been employed by the Dow Chemical Co. in Freeport, Texas, for the past six years in the Engineering Department and presently holds the position of Utilities Section Engineering Manager. He supervises a group of project engineers who handle all of Texas Division service and power projects. According to Mr. Wimbrow, Dow is a fine employer and he heartily recommends the company to any engineer who might like to move to Texas. His current address is 115 Chinaberry, Lake Jackson, Texas.

J. HAROLD LINK, B.S. in E.E. '40, is employed as an Electrical Engineer in the Interior Communications Branch of the Bureau of Ships, Navy Department. His work is in the field of Ship Metering and Indicating Systems. He is now living at 5631 Knollwood Road, Washington 16, D. C.

LAWRENCE G. WALTER, B.S. in E.E. '32, retired under Civil Service from the Corps of Engineers, U. S. Army, in 1952 while holding the ratings of electrical and mechanical engineer. In March, 1957, he reached Naval Reserve retirement age and retired as a Commander from the Navy's Civil Engineer Corps. He served in the Navy in World Wars I and II. Mr. Walter attended some of the homecoming festivities at the University this year and recalled at that time that he served as Secretary of the Engineer Alumni Association under President Edwin Schmitt in 1936 or 1937. His address is Stony Creek Road, Rt. 1, Rockville, Md.

MRS. CHARLES E. TOWNSEND, B.E.E. '51, has recently moved to 3529 Tilden Street, N. W., Washington 8, D. C.

TO: ALUMNI EDITOR

Mechelecіv Magazine
The Davis-Hodgkins House
The George Washington University
Washington 6, D. C.

From: _____

_____

_____

Here are a few comments for ALUMVIEWS on where I am working, what I'm doing and news of my family.

_____

_____

_____

_____

Degree and Date _____ **Fraternity** _____

CAMPUS NEWS

SIGMA TAU

The Sigma Tau Counseling Service is rolling along now that students are beginning to realize which subjects they are having difficulty in. A word of caution to students who have been considering getting in touch with "someone" about this service: The day before you take the final is too late for a tutor to do you much good.

The members of Sigma Tau provide this free counseling in subjects in the engineering curriculum to anyone who requests it. They will not do homework for the student with "gold bricking" ideas but will try to help any conscientious student locate the source of his trouble and then correct it.

If you feel that you have need of counseling, get in touch with a member of the faculty or a member of Sigma Tau and make your needs known. A counseling schedule will be set up for you.

AIEE—IRE STUDENT BRANCH

Chairman Norm Street, Secretary Woody Everett, and Counselor Prof. Norman B. Ames attended the AIEE District No. 2, Student Activities Committee meeting at Swarthmore College, Swarthmore, Pennsylvania, on November 1. The purpose of the annual meeting is to acquaint the Branch Counselors and Chairmen with the activities of their district and to discuss branch activities and problems.

After registration, the group was welcomed formally by Dean W. Prentice of Swarthmore. The group was then divided into two sections, chairmen and counselors. The chairmen discussed engineering education, membership in organizations, finances, activities, prize paper competitions, and a report on the meeting of the Student Branches Committee at Montreal, Canada, in June. The counselors discussed AIEE Student Branches as an Educational Tool, prize paper competitions, and a report on the Montreal meeting.

A scheduled tour of the Swarthmore campus was cancelled because of inclement weather and the final event of the gathering was the dinner held in the college dining room.

ENGINEERS' COUNCIL

The Engineers' Athletic Teams sponsored by the Engineers' Council have shown steady improvement during their organizational period. They are now in need of the support of students who would like to play basketball during the season just starting. Those interested should get in touch with Ralph De Lalla at the Davis-Hodgkins House. The next major team sport after the basketball season closes will be softball. There's no reason why the School of Engineering couldn't have a real powerhouse with its several hundred students to choose from.

The memorabilia committee has completed its assigned task with the completion of the painting of the portrait of Dean Miller, former Dean of the School of Engineering. Portraits of all of the past deans of the School are now ready for hanging in Tompkins Hall.

The Davis-Hodgkins House is becoming more attractive all the time. A water cooler and new soft-drink machine have been obtained and new drapes and probably some new furniture will be purchased in the near future. House Manager Phil Pendleton requests that all students treat the house as their own. That includes taking care of the furniture and making a reasonable effort to keep the house neat and clean.

The Engineers' Council Litterbug Committee under the chairmanship of Bob Reining has placed some clever and well-executed posters at vantage points in Tompkins Hall. These posters were designed by the Lokerson twins of the School of Engineering and A.F.R.O.T.C. The posters are effective in getting the message across but whether it is carried out or not depends on the individual students. Let's cooperate in keeping the trash in the proper containers and in not scarring the floor by carelessly stamping out cigarette butts on it.

ODK TAPS

The Bob and Ray team of the School of Engineering, Bob Shuken and Ray Sullivan, were rewarded for their years of devotion to extracurricular activities by being tapped for Omicron Delta Kappa, Junior-Senior Men's Honorary, at the Homecoming Ball. The initiation ceremony and banquet were held in the Kennedy-Warren Hotel on November 6. Bob and Ray were Freshman Representatives to the Engineers' Council when the office was first established by amendment to the Council Constitution in 1954. Bob represented the day students and Ray represented the night students. That was the only year during which both freshman representatives remained active during the whole school year. Since then, both individuals have taken continuous and active part in activities, with Bob leaning toward University activities and Ray tending toward School of Engineering activities.

What's doing...

One indication of accomplishment in the combustion field: the J-57 engine, augmented by afterburner, provided the thrust which made supersonic flight practical for the first time.

This special periscope gives Pratt & Whitney Aircraft engineer a close-up view of combustion process actually taking place within the afterburner of an advanced jet engine on test. What the engineer observes is simultaneously recorded by a high-speed motion picture camera.

at Pratt & Whitney Aircraft in the field of Combustion

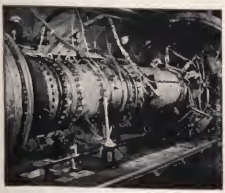
Historically, the process of combustion has excited man's insatiable hunger for knowledge. Since his most primitive attempts to make use of this phenomenon, he has found tremendous fascination in its potentials.

Perhaps at no time in history has that fascination been greater than it is today with respect to the use of combustion principles in the modern aircraft engine.

At Pratt & Whitney Aircraft, theorems of many sciences are being applied to the design and development of high heat release rate devices. In spite of the apparent simplicity of a combustion system, the bringing together of fuel and air in proper proportions, the ignition of the mixture, and the rapid mixing of burned and unburned gases involves a most complex series of interrelated events — events ocurring simultaneously in time and space.

Although the combustion engineer draws on many fields of science (including thermodynamics, aerodynamics, fluid mechanics, heat transfer, applied mechanics, metallurgy and chemistry), the design of combustion systems has not yet been reduced to really scientific principles. Therefore, the highly successful performance of engines like the J-57, J-75 and others stands as a tribute to the vision, imagination and pioneering efforts of those at Pratt & Whitney Aircraft engaged in combustion work.

While combustion assignments, themselves, involve a diversity of engineering talent, the field is only one of a broadly diversified engineering program at Pratt & Whitney Aircraft. That program—with other far-reaching activities in the fields of instrumentation, materials problems, mechanical design and aerodynamics — spells out a gratifying future for many of today's engineering students.



Mounting an afterburner in a special high-altitude test chamber in P&WA's Willgoos Turbine Laboratory permits study of a variety of combustion problems which may be encountered during later development stages.

Microflash photo illustrates one continuing problem: design and development of fuel injection systems which properly atomize and distribute under all flight conditions.

Pratt & Whitney Aircraft engineer manipulates probe in exit of two-dimensional research diffuser. Diffuser design for advanced power plants is one of many air flow problems that exist in combustion work.

World's foremost designer and builder of aircraft engines

PRATT & WHITNEY AIRCRAFT

Division of United Aircraft Corporation

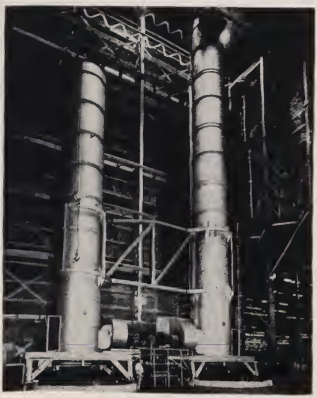
EAST HARTFORD 8, CONNECTICUT

NEWS IN INDUSTRY

10-Story High Furnace

One hundred and ten feet high and seven feet in diameter, the vertical electric furnace was designed and constructed by Westinghouse to heat treat extruded aluminum alloy shapes. The furnace provides controlled temperatures to multiply several times the strength of precision aluminum for aircraft, construction, and other uses.

Aluminum pieces up to 80 feet long are suspended in the furnace and heat treated at tempertures up through 800 degrees F. At the end of the heating cycle, a door at the bottom of the furnace is opened and the aluminum parts are plunged into an underground quenching tank 110 feet deep and 18 feet in diameter. After a finishing process called stretching, the aluminum is ready for shipment to the customers.



Vertical Electric Furnace

3-D Color TV

The world's first closed-circuit three-dimensional color television system has been developed by GE for remote servicing of reactors used in development of a nuclear aircraft propulsion system. The color stereo system was developed to permit use of color-coded parts in reactor components and to provide the degree of precise depth perception required for their correct positioning. The new system makes remote adjustments of parts much easier than by black and white, two-dimensional TV.

The new TV system is described as "currently not feasible for the American living room," but suited for adaptation to other uses for closed-circuit television. Development of this new system marks the first use of color television with stereo.

In use, the television camera will be positioned inside the radioactive area. The viewing screen will be located a considerable distance away, behind thick shielding walls and near the controls of a mechanical manipulator. Movements of the manipulator inside the radioactive area will be directed by a technician from the 3-D color picture appearing on the screen.

The technician will view this picture through special polarizing glasses similar to those used with recent 3-D motion pictures. Included with the manipulator controls will be one used to aim and focus the twin lenses of the camera.

The new system works like this:

The observer's viewpoint is effectively transferred to that of a camera equipped with a dual-optical system having perspective similar to that of the two eyes of the observer.

However, instead of presenting the pictorial image to two sensitive surfaces, as the human eyes do, the stereo-TV system presents two images to a single sensitive surface, a television tube on a time-sharing basis.

The frequency of the time sharing is at the picture rate of the television system, in this case 90 pictures a second. By alternating 45 pictures a second for each eye, engineers have eliminated any objectionable flicker.

A rotating shutter in the special color-TV camera alternately transmits the scene as viewed from two points to the camera's tube.

The distance between the two points corresponds approximately to twice the distance between a person's eyes.

In the viewing console, light from the television image formed on the cathode ray tube passes through a drum composed of alternate segments of polarizing filters with axes of polarization at right angles to each other. The drum revolves in synchronism with the television frame rate of the camera and polarizes alternate frames vertically and horizontally. Thus all left-eye pictures are polarized in one direction and all right-eye pictures are polarized in the other direction.

An observer viewing the screen—with his polarized spectacles—sees the left optical path with his left eye and the right optical path with the right. The 45-frame-per-second rate gives him stereovision without an objectionable flicker.

Recruiting Code for Colleges Gains Wide Acceptance

As did the mustache cup, college recruiting that employs "the fustest with the mostest" tactics is apparently doomed to pass from the American scene. The prediction comes as a result of the promulgation of a set of recruiting principles and practices approved by the U. S. Chamber of Commerce and the College Placement Council, Inc.

In addition to this sponsorship, the code has won the approval of the executive committees of regional placement associations that represent both college and employer groups.

The standards are designed to insure that campus recruiting takes place in an objective atmosphere with a complete understanding of all facts by both student and recruiter. The code has four basic objectives:

1. To promote a wise, responsible choice of a career by the student.
2. To strengthen in him a high standard of integrity and a concept of similar ethics in the nation's employers.
3. To develop in the student an attitude of personal responsibility for his own career.
4. To minimize interference with the educational processes of the college.

Besides spelling out what the recruiter and the college must do to attain these objectives, the code also spells out what the student must do to remain completely fair with both. In addition, a set of rules is recommended that will permit the recruiter to arrange his interviews and plant tours without interfering with normal college activities.

The code suggests voluntary acceptance of the new standards as a means of eliminating the high pressure recruiting methods too often used on American campuses.

Salt-Stabilized Roads

Salt used as a stabilizing agent for base and sub-base construction is reported to save 80% of the maintenance costs of old limestone roads. Where old roads were rough and dusty in dry weather and muddy in rain, the salt-stabilized roads remain hard and smooth. A 2-inch asphaltic concrete wearing surface can be added later. The salt-stabilized base cuts down expansion and contraction and other problems caused by weather and traffic.

$6,300,000,000

This is the amount that will be spent on industrial research this year in the U. S. More has been spent in this field since 1950 than in the previous 180 years of our national history.

In 1920 about 9,000 engineers and scientists were working on research; today there are over 2,000,000. Laboratories have increased from 220 to more than 4,000.

VOLKSWAGEN

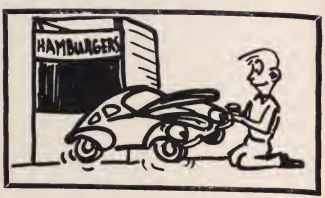
(*Continued from page* 11.)

styles and engines remaining fairly static this big investment could be written off over a long period of time. The cost would be small compared to retooling and design costs to continue the present trend in U. S. autos. What would the price of the present Detroit product be if retooling and design costs weren't so fantastically high at least every other year?

One of the greatest problems of the auto industry is to keep all facilities operating at capacity throughout the year. The high overhead on expensive machinery, buildings and equipment goes on whether production does or not. If, during slack or shut-down periods, these facilities could be used to turn out a VW-type car, there would be no need to assign it to more than a small part of the overhead. With the United Auto Workers clamoring for a yearly guaranteed wage this type production plan would be doubly profitable.

American engineers have proved many times over that they can produce the best products for the lowest prices. But it looks as if we'll be licked in the small car field if Detroit refuses to look matters squarely in the face. The market for small economical cars is a cinch to go on booming, for an increasing number of people are becoming more interested in inexpensive transportation than they are in long sleek lines, horsepower and fancy gadgets. The money they save on a small car will make payments on a home, buy an extra car for the wife, or go toward buying other previously inaccessible luxuries.

Most people in the world believe that the U. S. builds the best "big" cars. Can they outchampion to VW? It will be interesting to see.



The VW is an economical car.

RCA High Fidelity Tape Recorders make it easy as taking a snapshot to record "New Sensations in Sound"

CLICK! You press a button and the sound is yours forever *exactly* as you hear it today.

Why *"exactly"*?

Because this is an RCA Victor New Orthophonic High Fidelity Tape Recorder. It features the most advanced achievements of the world's finest sound engineers.

You can record at 2 speeds—one for music, one for voice. You can locate any part of any recording. Just look through a "window" to a numbered counterwheel. Push a button and you control "Rewind," "Playback," "Forward," "Recording," "Stop." There's ever a provision for remote control.

And wait till you hear the playback. On RCA Victor's Panoramic three-speaker sound system you really sound like *you!* Equally important, the price of these superb examples of RCA engineering now runs as low as $159.95.

In every sense these achievements in tape recorders typify all the work of the David Sarnoff Research Center in Princeton, New Jersey. For here RCA scientists and engineers are finding most practical and dramatic answers in their day-to-day search for ever-better "Electronics for Living."

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Where to, Mr. Engineer?

RCA offers careers in research, development, design and manufacturing for engineers with Bachelor or advanced degrees in E.E., M.E. or Physics. For full information, write to: Mr. Robert Haklisch, Manager, College Relations, Radio Corporation of America, Camden 2, N. J.

RADIO CORPORATION OF AMERICA

Electronics for Living

STRAWS

(*Continued from page 9.*)

thing that can really help. Why this message to you? Because the mature worker is becoming more and more of an element in the working population, and society is not adapting fast enough to this fact. Let's put the shoe on the other foot and project to the day when we're "forty plus". Let's help industry make this transition that has been all too slow in coming.

Right alongside the older worker problem in our society is another problem we must come to terms with in the very near future; the problem which may very soon be confronting you in your own domestic situations: that of a married woman who has married young, rears her children to an age at which she can leave them to return to full-time work only to find she is untrained for the type of work she seeks. Most of today's college graduates are married or do marry one or two years after graduation. Couples start families early and in most cases this means that the young wife, though she may have a college degree which could give her opportunities for professional or administrative work, does not have a chance to get started on "a career path" before home responsibilities take most of her time. (Naturally there are hundreds of girls and hundreds of situations which do not fall into this category but we are speaking here of a *majority* of young college wives.) We're seeing more and more women who have married at relatively young ages, have reared their children, and seek to come back into the labor market at jobs that will "utilize their educational background". This is their wish even though their job experience might have been six months at a clerk-typist level. They are highly frustrated when they find that administrative jobs and professional or semi-professional fields want more than a college degree earned five to fifteen years previously! What's needed? Training for these women is one answer. Enlightenment on the part of wife, husband, and employer alike is another. Women will have to learn to be realistic about how little commercial value, regardless of its aesthetic and moral values, child-rearing and community services have unless combined with specific skills and academic or business knowledge! Husbands must be understanding of the economic and social drives that make career interests important to their wives after family responsibilities have leveled off, and employers must wake up to the fact that if they want to utilize a very excellent labor supply they will have to make available training for mature women. Educators are already realizing that mature women want to come back to college for refresher and new training. Companies should work closely with local educational institutions in offering courses in education, accounting, library science, stenography, management, etc. You as husbands and potential employers of these women will have to be flexible enough to work with the problems that these women bring to their jobs and their homes, but since these women are a source of potential skill which is to be more and more needed in our economy it is only good sense that we recognize these training needs now.

Mere straws in the wind, these, and not intended as sermons. Placement officers get to feeling strongly about things as their ears are bent day after day by the fascinating variety of people who seek their counsel and their job leads. It's not fair at this point to do anything but depart quietly with the sincere wish that you'll all find satisfying and productive channels for your talents when the time comes for you to make your first and any necessary subsequent job decisions. Keep in touch with your Placement Office! Increasingly that office is being of valuable assistance to alumni. Your training is not only of great value to yourselves but you are a real source of strength to your University, and it is your University's pleasure to work with your vocational needs.

Maximum results from a college education...

In the field of cryogenics, where temperatures approach absolute zero, design problems multiply. Garrett mechanical, chemical and metallurgical engineers worked together to produce this fan which rotates at 10,000 rpm at −420°F ... without lubrication!

Education is the springboard for your future. Couple it with the proper engineering experience, such as you receive at Garrett, and you have the ingredients for a successful career in engineering fields which will be expanding for years.

At Garrett, specific opportunities in aircraft, missile and technological fields include: system electronics; computers and flight instruments; gas turbine engines and turbine motors; prime engine development; cryogenic and nuclear systems; pneumatic valves; servo control units and air motors; industrial turbochargers; air conditioning and pressurization and heat transfer.

In addition to direct assignments, a 9-month orientation program is available to aid you in selecting your field of interest. This permits you to survey project, laboratory and administrative aspects of engineering at Garrett. With company financial assistance you can continue your education at outstanding universities located nearby.

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FACULTY PAGE

(*Continued from page* 7.)

In dealing with the present threat of military domination supported by an aggressive group of scientists and engineers, it is too easy to lapse into fighting back with the same kind of methods. The scientist and the engineer in this country face the challenging task of preserving our nation without sacrificing through expediency the freedom to think and act. There is no pat answer as to how to cope with this problem. Each situation, whether it be limitations on the free flow of knowledge, regimentation of engineers, or the development of a society where the scientist and the engineer occupy a place of disproportionate importance, must be met by each individual. Historically conditions of these kinds have arisen when the engineer was not alert to the danger or did not have the moral courage to resist it. The first steps towards the restriction of freedom have often appeared innocuous. Because the individual did not defend himself. he subsequently became entangled in a web which his own apathy helped to build.

The social influence that would encroach upon the engineer's freedom to think as an individual are frequently more difficult to discern than the political influences. An example is the pressure to conform. The writer is not referring to trivial aspects of this influence, but rather to the inertia that resists radical change, basic research, and fresh ideas in general. A profound thinker is by nature an innovator. The temptation to be content with present progress is foreign to his way of thinking. The engineer should be broadening his horizons by keeping abreast of new advances in his field and neighboring areas, as well as in the humanities and in social and political affairs. The uniformity, the lack of imagination, and the mental laziness of mob thinking have no place in engineering, because they result in mediocrity and are not the product of a thinking individual.

The writer was once approached for advice by a graduating senior who had been offered a position which promised a new automobile during the second year of service. The senior was earnestly trying to consider the opportunity objectively from the standpoints of its possibilities for future growth in his professional and his own inclinations as to type of work, but the matter of the automobile kept intruding upon his deliberations. One might ask why the value of the automobile was not offered in the form of additional salary. Obviously, it then would have become a permanent commitment which it was not intended to be. Any engineer under this uncertain form of remuneration must feel in debt to his employer in more than a professional sense. In short, he sacrifices some of his privilege to think as an individual.

The majority of the organizations seeking new engineering talent attract the engineer by the substantial character of the opportunity they offer. It is significant that surveys among college seniors have shown that most want the position in their field of interest where they can best learn more about engineering. However, the senior should be alert to overzealous methods of recruiting.*

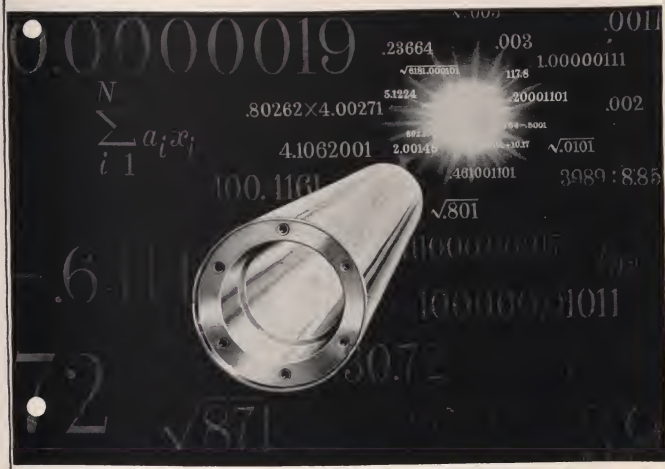
The engineer is sometimes confronted with the decision of remaining in a position offering excellent opportunities for professional development or accepting a somewhat higher paying position of a rather routine nature. The alert individual knows that the steady growth of his ability is the best long-term investment. In general, it might be said that when economic factors begin to outweigh the engineer's inner desire to think and create as an individual, he is in danger of giving up some part of his individuality.

The present trend towards bigness in industrial and governmental organizations encourages employers to regard their total employees as a smooth-functioning machine in which each person is a cog. Since each cog has a more or less assigned function, the tendency is often to fit the employee to the job rather than the job to the employee. A half a century ago when engineers were primarily consultants who directed their own efforts, they were relatively free to think and act within the limits they set. Today the engineer in industry and government may frequently find himself working under close supervision. The writer is not implying that we should reorganize industry and government, but he wishes to point out that the engineer in these areas is in danger of becoming less of an individual unless he resists this trend. Membership in and participation in the activities of professional engineering societies are ways in which he finds contrast outside his company affiliation. The provision by industry and government for graduate study is another avenue towards broadening the individual. Some organizations regularly encourage an engineer to pursue his own

* See, for example, The Saturday Evening Post, September 14, 1957, Anonymous, "I Am a Kidnaper of Sorts."

(*Please turn to page* 24.)

Tear out this page for **YOUR STEEL NOTEBOOK...**



Small steel tube with a giant memory

IBM engineers needed a small steel tube—a memory unit for a computer—whose whirling surface would pick up thousands of complicated figures as magnetic impulses, retain and, years later, read them back instantly. This called for the cleanest, most uniform quality steel that could be produced. IBM consulted Timken Company metallurgists, who recommended a certain analysis of Timken® fine alloy seamless steel tubing. IBM found the steel so clean that when properly plated it accurately recorded up to 100,000 electro-magnetic impulses. So strong it withstood the centrifugal forces of 12,000 rpm without distortion or damage. It's another example of how Timken Company metallurgists solved tough steel problems.

WANT TO LEARN MORE ABOUT STEEL OR JOB OPPORTUNITIES?

To learn more about electric furnace fine alloy steel, send for "The Story of Timken Steel Quality". And for help in planning your future, write for "Career Opportunities at the Timken Company". We will reply promptly. The Timken Roller Bearing Company, Canton 6, Ohio.

See the next Timken Televent hour, "The Innocent Years" over NBC-TV, Thursday night, November 21st.

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SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

FACULTY PAGE

(*Continued from page* 22.)

ideas although they may not lie in the area to which he is assigned. However, employers still have much to learn about their relationship with the engineer and the preservation of his professional status as a thinking individual. It should also be said that the engineer in industry and government has not made a sufficient effort to protect his professional status.

Unfortunately, not all of the engineering graduates in industry, government, and education truly understand what a professional engineer is. Engineering competence and moral and intellectual integrity he must of course have. There are however other ingredients of equal importance. The true professional engineer is a pioneer, an idealist, and an individual who resents and resists any encroachment upon his privilege to think and act as an individual. Further, he is a dedicated man. He firmly believes in what he is doing and has the inner satisfaction cf knowing that he is a substantial contributor to the welfare of his fellow man. In brief, he is acting as an individual.

The engineer, like those in other professions and in the arts, is not gregarious in his everyday work. Outside of this daily activity he enthusiastically enters into supporting and leading professional societies for the purpose of mutual benefit and the dissemination of knowledge. However, in his everyday work he tends to be an individual in his thinking and is inclined to avoid those group activities where he cannot act as an individual. The indifferent success of unionization of engineers is evidence of this feeling. This characteristic, typical of those who are primarily thinkers, is at the same time both the strength and the weakness of the engineer. It is his strength because he becomes accustomed to meet and cope with adverse situations as an individual and with the force of his own thinking. It is simultaneously his weakness in that he must ever be alert to encroachments upon his freedom to think and act as an individual because he tends to stand alone.

Every engineering graduate faces a challenging and exciting vista, but the way toward it may contain pitfalls, some well-camouflaged. It is only by maintaining his moral and intellectual integrity as an individual that the engineer finds his proper place. If he knowingly or unknowingly sacrifices his privilege to think as an individual, the loss will occur through his own apathy or lack of vigilance. His guide must be clear and objective thinking, the kind of thinking that is characteristic of an individual.

PROBLEM PAGE

By JIM LEAR, B.E.E. '59

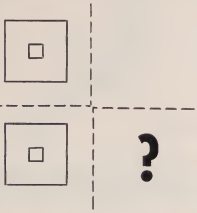
This page is our latest attempt to provide our readers with a few tricky problems to provide an hour or two of relief from the problem solving inherent in an engineering curriculum.

We are also looking for a title for the page. Anyone who would like to submit a title to a staff member will receive credit in a succeeding issue if his title is used.

We intend to publish the answers to each set of problems in the following issue unless readers indicate that they would prefer to have the answers in the same issue.

If you are particularly proud of your problem-solving prowess, whip out the answers to the following ten problems and mail your answers to us. If correct, you will be given due recognition in a later issue.

1. Can you draw the side view of this solid figure? The two views given are complete and are in accordance with standard drawing practices.



2. At a fraternity party recently an engineer noticed that the keg had three taps on it. He knew that if only the first tap was open the keg would last 15 minutes, while if taps two or three were open the keg would last 30 or 45 minutes, respectively. How long would it last if all three taps were open at once?

3. A clerk finds that he can weigh articles of any integral weight from 1 to 40 pounds by using only four weights totaling 40 pounds. What were the four weights?

4. An amoeba reproduces by dividing in two every minute. At the start there is only one, at the end of one minute there are two, and so forth. If it takes one hour and forty minutes to cover a certain area, starting with one amoeba, how long would it take to cover the same area if there had been eight amoeba at the start?

5. Present at a recent meeting were a Civil Engineer, an Electrical Engineer, a Mechanical Engineer, and a Physics Major. Their names were Allen, Baker, Curtis, and Davis. Allen and the E. E. were on bad terms with Curtis, but Baker was on the best of terms with the Physics Major. Curtis was related to the M. E., and the C. E. was a good friend of Davis and the Physics Major. Can you match the names with the professions?

6. An aviator flew around a square course at the following speeds: 100 mph on the first leg, 200 mph on the second leg, 300 mph on the third leg, and 400 mph on the final leg. What was his average ground speed?

7. George is now twice as old as Harry, but four years ago George was six times as old. How old is Harry?

8. A ship at sea strikes a floating mine and begins to take on water. The crew wants to take to the lifeboats, but the Captain decides to try to bring the ship into port. He estimates that he is forty miles from port, and that the ship is admitting 3¾ tons of water into her hold every twelve minutes. If she admits 60 tons of water she will sink. The pumps throw out 12 tons of water in an hour. If the speed of the ship is reduced to 2¼ mph, can the ship make port, or how far from port will it sink?

9. Can you replace the letters of the following message with numbers so that the indicated addition is correct?

```
  SEND
  MORE
 MONEY
```

10. An engineer on a road construction project estimated that he could finish the job in another week if he received two more bulldozers, or a day longer than that if he had to use only the bulldozers he had. If all but one of his bulldozers are taken away from him, how long will it take to finish the job?

CAN YOU FIGURE IT OUT?

Re-arrange the numbers 1 to 49 so that all rows, horizontal and vertical, and the two major diagonals, add up to 175 each. It can be done!

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42
43	44	45	46	47	48	49

*Solution at bottom of page

Lee Baker tells what it's like to be... and why he likes being... a Manufacturing Engineer with IBM.

FIGURING OUT A CAREER?

Selecting a career can be puzzling, too. Here's how Lee Baker found the solution to *his* career problem—with IBM:

Despite his impending Service hitch, Lee was hired by IBM in 1953. As a Technical Engineer, he entered the General Manufacturing Education Program, a 10-month course with rotating assignments in all phases of the work: manufacturing, purchasing, production. Then came two years in Korea. Now back at IBM, Lee has been promoted to Production Control Engineer, responsible for designing systems to insure a smooth flow of work through the IBM electronic computer plant. "It takes *creative* engineering ability to design these systems," says Lee, "and *administrative* ability to 'sell' a system to higher management."

* * * *

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30	39	48	1	10	19	28
38	47	7	9	18	27	29
46	6	8	17	26	35	37
5	14	16	25	34	36	45
13	15	24	33	42	44	4
21	23	32	41	43	3	12
22	31	40	49	2	11	20

SLIPSTICK SLAPSTICK

Drunk: "What's that crawling up the wall across the room?"
Bartender: "A lady bug."
Drunk: "Gad, what eyesight!"

* * *

M. E.'s Wife: "There's a woman peddler at the door."
M. E.: "Show him in and tell him to bring some samples with him."

* * *

"Of course you're the first girl I've ever kissed," said the C. E. as he shifted gears with his foot.

* * *

After a brief visit at a friend's house, Pat was amazed at how often his friend's grandmother read the Bible. Before leaving he asked why the elderly woman took such an interest in the Book. "Cramming for finals," was the reply.

* * *

He was a small and undersized freshman at his first college dance, but despite his smallness and shyness he was sure of himself in his own way. He walked over to a beautiful and over-sophisticated girl and said, "Pardon me, Miss, but may I have this dance?"

She looked down at his small size and lack of fraternity pin and said, "I'm sorry, but I never dance with a child."

The freshman bowed deeply and said, "Oh, I'm sorry; I didn't know your condition."

* * *

A street cleaner was fired for daydreaming; he couldn't keep his mind in the gutter.

* * *

"Mommy, why is it that Daddy doesn't have much hair?"

"Because he thinks a great deal, dear."

"But Mommy, why is it that you have so much hair?"

"Finish your breakfast, dear."

* * *

Stopping at the first home on his famous ride, Paul Revere cried, "Is your husband home?"

"Yes," came the answer.

"Then tell him to dress and prepare to fight the British."

At the second, third, and fourth houses he repeated the conversation. As he rode by the fifth house he again repeated the cry.

"No," was the reply.

"WHOA!"

Truck driver stopping by stalled MG on highway: "What's the matter, buddy, need a new flint?"

* * *

Sigma Tau: "Are you the barber who cut my hair last time?"
Barber: "I don't think so; I've only been here six months."

* * *

"Still engaged to Maude?"
"No."
"Good."
"What?"
"Good, how'd you get rid of her?"
"What?"
"How'd you drop the old hag?"
"I married her."

* * *

Did you hear about the angry golf ball? It was teed off.

* * *

She: "I'm perfect."
He: "I'm practice."

* * *

"Who ever told that guy he was a prof? He might know it but he can't teach it. The trouble is that he is too far advanced. Every time he tries to explain something, he gets so far off the subject that no one understands anything about it. He oughta go back to the farm, or try teaching a more advanced course."

"Yeah, I flunked the course, too."

* * *

"Madam, may I see your daughter?"
"No. Get out and stay out."
"But madam, see this badge? I'm a detective."
"Oh, I'm sorry. Come in. I thought it was a fraternity pin."

* * *

"I see that ten professors and a student were killed in that train wreck yesterday."
"Poor guy."

* * *

A young man and date pulled over to the side of the road.

She: "You're not going to pull that 'out of gas' routine, are you?"
He: "Naw, I use the 'hereafter' routine."
She: "The 'hereafter' routine?"
He: "If you're not here after what I'm here after, then you'll be here after I'm gone."

* * *

Statistics show there are three classes of coeds: the intellectual, the beautiful, and the majority.

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TRADE MARK

One of a series

Interview with General Electric's Hubert W. Gouldthorpe Manager—Engineering Personnel

Your Salary

Although many surveys show that salary is not the prime factor contributing to job satisfaction, it is of great importance to students weighing career opportunities. Here, Mr. Gouldthorpe answers some questions frequently asked by college engineering students.

Q. Mr. Gouldthorpe, how do you determine the starting salaries you offer graduating engineers?

A. Well, we try to evaluate the man's potential worth to General Electric. This depends on his qualifications and our need for those qualifications.

Q. How do you evaluate this potential?

A. We do it on the basis of demonstrated scholarship and extra-curricular performance, work experience, and personal qualities as appraised by interviewers, faculty, and other references.

Of course, we're not the only company looking for highly qualified men. We're alert to competition and pay competitive salaries to get the promising engineers we need.

Q. When could I expect my first raise at General Electric?

A. Our primary training programs for engineers, the Engineering Program, Manufacturing Program, and Technical Marketing Program, generally grant raises after you've been with the Company about a year.

Q. Is it an automatic raise?

A. It's automatic only in the sense that your salary is reviewed at that time. Its amount, however, is not the same for everyone. This depends first and foremost on how well you have performed your assignments, but pay changes do reflect trends in over-all salary structure brought on by changes in the cost of living or other factors.

Q. How much is your benefit program worth, as an addition to salary?

A. A great deal. Company benefits can be a surprisingly large part of employee compensation. We figure our total benefit program can be worth as much as 1/6 of your salary, depending on the extent to which you participate in the many programs available at G.E.

Q. Participation in the programs, then, is voluntary?

A. Oh, yes. The medical and life insurance plan, pension plan, and savings and stock bonus plan are all operated on a mutual contribution basis, and you're not obligated to join any of them. But they are such good values that most of our people do participate. They're an excellent way to save and provide personal and family protection.

Q. After you've been with a company like G.E. for a few years, who decides when a raise is given and how much it will be? How high up does this decision have to go?

A. We review professional salaries at least once a year. Under our philosophy of delegating such responsibilities, the decision regarding your raise will be made by one man—the man you report to; subject to the approval of only one other man—his manager.

Q. At present, what salaries do engineers with ten years' experience make?

A. According to a 1956 Survey of the Engineers Joint Council*, engineers with 10 years in the electrical machinery manufacturing industry were earning a median salary of $8100, with salaries ranging up to and beyond $15,000. At General Electric more than two thirds of our 10-year, technical college graduates are earning above this industry median. This is because we provide opportunity for the competent man to develop rapidly toward the bigger job that fits his interests and makes full use of his capabilities. As a natural consequence, more men have reached the higher salaried positions faster, and they are there because of the high value of their contribution.

I hope this answers the question you asked, but I want to emphasize again that the salary *you* will be earning depends on the value of *your* contribution. The effect of such considerations as years of service, industry median salaries, etc., will be insignificant by comparison. It is most important for you to pick a job that will *let* you make the most of your capabilities.

Q. Do you have one salary plan for professional people in engineering and a different one for those in managerial work?

A. No, we don't make such a distinction between these two important kinds of work. We have an integrated salary structure which covers both kinds of jobs, all the way up to the President's. It assures pay in accordance with actual individual contribution, whichever avenue a man may choose to follow.

*** We have a limited number of copies of the Engineers Joint Council report entitled "Professional Income of Engineers—1956." If you would like a copy, write to Engineering Personnel, Bldg. 36, 5th Floor, General Electric Company, Schenectady 5, N. Y.**

959-7

LOOK FOR other interviews discussing: • Advancement in Large Companies • Qualities We Look For in Young Engineers • Personal Development.

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